*Related information*

- *Windows Resource Kit:* Chapter 2, "The Windows Setup Information Files"; Chapter 4, "The Windows Initialization Files"; Appendix C, "Windows 3.1 Disks and Files"

***Chapter***

# *3 The Windows Files*

A question that technical people often ask about Microsoft Windows is:
*What does this file do?* This chapter describes the purpose for each file in the WINDOWS directory and the SYSTEM subdirectory.

For information about how to add to the list of files that are installed automatically with Windows, see "Modifying .INF Files for Custom Installations" in Chapter 2, "The Windows Setup Information Files."

- *Glossary terms:* code page, EMS, XMS, protected mode, virtual device

***Contents of this chapter***

*Flowchart 1.7 Expanding Files from the Windows Disks*

For instructions on how to expand any files from the Windows installation disks, see Flowchart 1.7 on page 16. For technical information about the Windows 3.1 files, see the manuals for the Microsoft Windows Software Development Kit and Driver Development Kit.

## About the Windows Files

When Microsoft Windows runs, it performs all operating system duties except file system management, which MS-DOS still performs. Windows calls functions that are stored in a variety of executable files, driver files, and other dynamic-link libraries to manage the display, keyboard, and other devices, and to manage memory and execute programs.

The kinds of files that make up Windows 3.1 include:

- The WIN.COM file.
- The core dynamic-link libraries (kernel files, USER, and GDI) that contain the code and data for the Windows functions.
- The font files and the drivers for keyboard, display, system, mouse, printers, networks, multimedia, and other devices.
- The files that provide MS-DOS support components for Windows.
- The Windows applications files and other files such as shells, utilities, and accessories.

## WIN.COM

WIN.COM is the loader for Windows. It checks the machine type, memory configuration, and device drivers to determine which mode is appropriate to start Windows. To start Windows, there needs to be sufficient memory, an XMS driver present (such as HIMEM.SYS), and processor support for standard mode (80286 or higher) or 386 enhanced mode (80386 or higher).

After WIN.COM determines the appropriate operating mode, it uses the MS-DOS **exec** command to execute one of the following files, which in turn loads Windows:

- DOSX.EXE for standard mode
- WIN386.EXE for 386 enhanced mode

To build Windows, WIN.COM brings together a number of files:

- The core files
- The drivers
- The fonts and language support files
- Support files for non-Windows application
- MS-DOS support and various mode-specific files

## The Core Files

Three files make up the Windows core components: Kernel, User, and GDI.

- The kernel files (KRNL286.EXE or KRNL386.EXE) control and allocate all the machine resources to manage memory, load applications, and schedule program execution and other tasks.
- USER.EXE creates and maintains windows on the screen, carrying out all requests to create, move, size, or destroy a window. User also handles requests regarding the icons and other components of the user interface. User directs input to the appropriate application from the keyboard, mouse, and other input sources.
- GDI.EXE controls the Graphics Device Interface, which executes graphics operations that create images on the system display and other devices.

## Drivers, Fonts, and International Support Files

### Driver Files

Drivers make device independence possible for Windows applications, providing the hardware-specific interface between the physical devices and Windows. Setup can install several kinds of drivers for Windows, such as:

| | | |
|---|---|---|
| Comm drivers | Mouse drivers | Printer drivers |
| Display drivers | Multimedia drivers | Sound drivers |

Keyboard drivers Network drivers System drivers

The network, multimedia, and printer drivers are optional. Also, drivers can be installed to support virtual machines in 386 enhanced mode, as described in "Files for 386 Enhanced Mode" later in this chapter.

### System Driver Files

The system driver provides support for the system timer, information about system disks, and access to OEM-defined system hooks. There are two system drivers shipped with Windows:

- SYSTEM.DRV, the driver for most hardware systems
- HPSYSTEM.DRV, the HP Vectra system driver for standard mode

### Keyboard Driver Files

The keyboard drivers shipped with Windows support keyboard input:

- KEYBOARD.DRV for standard keyboards, installed by default
- KBDHP.DRV for all Hewlett-Packard machines
- KBDMOUSE.DRV, the Olivetti/AT&T keyboard mouse driver

The keyboard driver is a standard driver for all systems worldwide. Windows can also handle international keyboards, including foreign symbols, by using the keyboard tables to refer to a language library.

| *Keyboard table* | *Language library* |
|---|---|
| KBDBE.DLL | Belgian keyboard |
| KBDCA.DLL | French-Canadian keyboard |
| KBDDA.DLL | Danish keyboard |
| KBDDV.DLL | U.S.-Dvorak keyboard |
| KBDFC.DLL | Canadian multilingual keyboard |
| KBDFI.DLL | Finnish keyboard |
| KBDFR.DLL | French keyboard |
| KBDGR.DLL | German keyboard |
| KBDIC.DLL | Icelandic keyboard |

| | |
|---|---|
| KBDIT.DLL | Italian keyboard |
| KBDLA.DLL | Latin American keyboard |
| KBDNE.DLL | Dutch keyboard |
| KBDNO.DLL | Norwegian keyboard |
| KBDPO.DLL | Portuguese keyboard |
| KBDSF.DLL | Swiss-French keyboard |
| KBDSG.DLL | Swiss-German keyboard |
| KBDSP.DLL | Spanish keyboard |
| KBDSW.DLL | Swedish keyboard |
| KBDUK.DLL | British keyboard |
| KBDUS.DLL | U.S. keyboard |
| KBDUSX.DLL | U.S.-International keyboard |

The .DLL filename extension indicates that the file is a dynamic-link library.

### Mouse Driver Files

The mouse drivers shipped with Windows support pointing devices for use with Windows and Windows applications.

| *Driver* | *Supported mouse or pointing device* |
|---|---|
| HPMOUSE.DRV | Hewlett-Packard mouse (HP-HIL) |
| KBDMOUSE.DRV | Olivetti/AT&T keyboard mouse |
| LMOUSE.DRV | Logitech Serial mouse |
| MSC3BC2.DRV | Mouse Systems COM2/3 button mouse |
| MSCMOUSE.DRV | Mouse Systems Serial/Bus mouse |
| MOUSE.DRV | Logitech Bus or PS/2 style, Microsoft, or IBM PS/2 mouse |
| NOMOUSE.DRV | No mouse attached to system |

For information about the related MS-DOS mouse drivers, see "MS-DOS Support Components of Windows" later in this chapter.

### Display Driver Files

The display drivers shipped with Windows support the system display and the cursor for the pointing device. The display driver, however, does not support non-Windows applications running in full screen, because such applications write directly to video.

| *Driver* | *Supported display adapter* |
|---|---|
| 8514.DR | 8514/a |
| EGA.DRV | EGA |
| EGAHIBW.DRV | EGA with 128K RAM |
| EGAMONO.DRV | EGA monochrome |

| | |
|---|---|
| HERCULES.DRV | Hercules monochrome |
| OLIBW.DRV | Olivetti/AT&T monochrome or PVC display |
| PLASMA.DRV | Compaq Portable plasma |
| SUPERVGA.DRV | Super VGA (800x600 - 16 colors) |
| TIGA.DRV | TIGA |
| VGA.DRV | VGA |
| VGAMONO.DRV | VGA monochrome, MCGA |
| V7VGA | Video Seven VGA with 512K (FastWrite, VRAM, 1024i, and compatibles) |
| XGA.DRV | XGA |

### Other Driver Files

The communications driver, COMM.DRV, supports serial and parallel device communications.

The Advanced Power Management device driver, POWER.DRV, supports the power management features of laptop and notebook PCS.

### Printer Driver Files

Printer drivers support output to the printer device. Some of the printer drivers shipped with Windows have a soft font installation utility. The related files also include help files for the printer drivers and soft font installers. In Windows 3.1, many of the dot-matrix drivers have been replaced by a universal printer driver. Other drivers have been updated for performance and to support TrueType fonts.

| *Printer driver* | *Representative printer* |
|---|---|
| CANON10E.DRV | Canon Bubble-Jet BJ-10e |
| CANON130.DRV | Canon Bubble-Jet BJ-130e |
| CANON330.DRV | Canon Bubble-Jet BJ-300/330 |
| CIT24US.DRV | Citizen 24-pin |
| CIT9US.DRV | Citizen 9-pin |
| CITOH.DRV | C-Itoh 8510 or AT&T 470/475 |
| DICONIX.DRV | Kodak Diconix |
| DM309.DRV | Olivetti DM 309 |
| DMCOLOR.DLL | Universal color printing support libary |
| EPSON24.DRV | Epson 24-pin |
| EPSON9.DRV | Epson 9-pin |
| ESCP2.DRV | Epson ESCP2 dot matrix |
| EXECJET.DRV | IBM ExecJet |
| FUJI24.DRV | Fujitsu 24-pin |
| FUJI9.DRV | Fujitsu 9-pin |
| GENDRV.DLL | Generic library |
| HPDSKJET.DRV | Hewlett-Packard DeskJet Series |
| HPPCL.DRV | HP LaserJet II Series |
| HPPCL5A.DRV | HP LaserJet III Series (HPPCL5A.HLP and HPPCL5OP.HLP are the help files) |
| HPPLOT.DRV | HP Plotter |
| IBM4019.DRV | IBM Laser Printer 4019 |
| IBM5204.DRV | IBM Quickwriter 5204 |

| *Printer driver* | *Representative printer* *(continued)* |
|---|---|
| IBMCOLOR.DRV | IBM Color |
| LBPII.DRV | Canon LBP-8 II |
| LBPIII.DRV | Canon LBPIII |

| | |
|---|---|
| NEC24PIN.DRV | NEC 24-pin |
| OKI24.DRV | Okidata 24-pin |
| OKI9.DRV | Okidata 9-pin |
| OKI9IBM.DRV | Okidata 9-Pin IBM Model |
| PAINTJET.DRV | HP PaintJet |
| PANSON24.DRV | Panasonic 24-pin |
| PANSON9.DRV | Panasonic 9-pin |
| PG306.DRV | PG 306 |
| PROPRINT.DRV | IBM Pro series |
| PROPRN24.DRV | IBM Pro 24 pin series |
| PS1.DRV | IBM PS/1 |
| PSCRIPT.DRV | Postscript (PSCRIPT.HLP is the help file) |
| QWIII.DRV | IBM QuietWriter III |
| THINKJET.DRV | HP ThinkJet (2225 C-D) |
| TI850.DRV | TI 850/855 |
| TOSHIBA.DRV | Toshiba p351/1351 |
| TTY.DRV | Generic / Text only (TTY.HLP is the help file) |
| UNIDRV.DLL | Microsoft universal library (UNIDRV.HLP is the help file) |

The following files are soft font installers for specific printers.

| *Soft font installer* | *Related printer* |
|---|---|
| CAN_ADF.EXE | Canon LBP-8 II or LBPIII |
| SF4019.EXE | IBM Laser Printer 4019 |
| SFINST.EXE | PG 306 |
| FINSTALL.DLL | HPPCL5/A (FINSTALL.HLP is the help file) |

The following files provide additional PostScript description information for specific printers.

| *PostScript description* | *Related printer* |
|---|---|
| 40291730.WPD | IBM LaserPrinter 4029 (17 fonts) |
| 40293930.WPD | IBM LaserPrinter 4029 (39 fonts) |
| EPL75523.WPD | Epson EPL-7500 |
| HERMES_1.WPD | Hermes H 606 PS (13 Fonts) |
| HERMES_2.WPD | Hermes H 606 PS (35 Fonts) |
| HPELI523.WPD | HP LaserJet IIISi PostScript |
| HPIID522.WPD | HP LaserJet IID PostScript |
| HPIII522.WPD | HP LaserJet III PostScript |
| HPIIP522.WPD | HP LaserJet IIP PostScript |

| *PostScript description* | *Related printer* *(continued)* |
|---|---|
| HP_3D522.WPD | HP LaserJet IIID PostScript |
| HP_3P522.WPD | HP LaserJet IIIP PostScript |
| IBM17521.WPD | IBM 4019 (17 fonts) |
| IBM39521.WPD | IBM 4019 (39 fonts) |
| MT_TI101.WPD | Microtek TrueLaser |
| N2090522.WPD | NEC Silentwriter2 90 |
| N2290520.WPD | NEC Silentwriter2 290 |
| N2990523.WPD | NEC Silentwriter2 990 |
| OL840518.WPD | Oki OL840/PS |
| Q2200510.WPD | QMS-PS 2200 |
| Q820_517.WPD | QMS-PS 820 |
| SEIKO_04.WPD | Seiko ColorPoint PS Model 04 |

| | |
|---|---|
| OLIVETI1.WPD | Olivetti PG 306 PS (13 fonts) |
| P4455514.WPD | Panasonic KX-P4455 |
| TRIUMPH1.WPD | Triumph Adler SDR 7706 PS (13 fonts) |
| N890X505.WPD | NEC Silentwriter LC890XL |
| N890_470.WPD | NEC Silentwriter LC890 |
| O5241503.WPD | OceColor G5241 PS |
| O5242503.WPD | OceColor G5242 PS |
| OLIVETI2.WPD | Olivetti PG 306 PS (35 fonts) |
| PHIIPX.WPD | Phaser II PX |
| SEIKO_14.WPD | Seiko ColorPoint PS Model 14 |
| TIM17521.WPD | TI microLaser PS17 |
| TRIUMPH2.WPD | Triumph Adler SDR 7706 PS |
| U9415470.WPD | Unisys AP9415 |
| TIM35521.WPD | TI microLaser PS35 |
| TKPHZR21.WPD | Phaser II PX I |
| TKPHZR31.WPD | Phaser III PX I |
| DEC1150.WPD | Digital DEClaser 1150 |
| DEC2150.WPD | Digital DEClaser 2150 |
| DEC2250.WPD | Digital DEClaser 2250 |
| DEC3250.WPD | Digital DEClaser 3250 |
| DECCOLOR.WPD | Digital ColorMate PS |
| DECLPS20.WPD | Digital LPS Print Server |
| NCM40519.WPD | NEC Colormate PS/40 |
| NCM80519.WPD | NEC Colormate PS/80 |
| L200230&.WPD | Linotronic 200/230 |
| L330_52&.WPD | Linotronic 330 |
| L530_52&.WPD | Linotronic 530 |
| L630_52&.WPD | Linotronic 630 |

### Network Driver Files

The network drivers provide a network interface to the Windows File Manager, Control Panel, Print Manager, and system utilities.

| *Driver* | *Support file* | *Supported network* |
|---|---|---|
| LANMAN.DRV | LANMAN.HLP | Microsoft LAN Manager 2.0 Extended (and 100% compatible) |
| | LANMAN.HLP | Microsoft LAN Manager 2.0 driver help |
| | NETAPI20.DLL | Microsoft LAN Manager API library |
| | PMSPL20.DLL | Microsoft LAN Manager printer API library |
| MSNET.DRV | | Generic network driver* |
| PCSA.DRV | | DEC Pathworks network driver |
| NETWARE.DRV | NETWARE.HLP | Novell NetWare 2.10 or above; Novell NetWare386 |
| | NWPOPUP.EXE | Supports pop-up messages |
| | NETX.COM | Workstation shell |
| | IPX.OBJ | Workstation comm driver (dedicated) |
| | IPXODI.COM | Workstation comm driver (ODI model) |
| | LSL.COM | Workstation link support layer (ODI) |
| | TBMI2.COM | Workstation task switch support (IPX/SPX) |

* MSNET.DRV supports 3Com 3+Share, 3Com 3+Open LAN Manager (XMS only), Banyan VINES 4.0, Microsoft LAN Manager 1.x (and compatibles), Microsoft LAN Manager 2.0 Basic (and compatibles), Microsoft Network (and compatibles), and IBM PC LAN Program.

For a list of the supporting virtual device files, see "Files for 386 Enhanced Mode" later in this chapter. For information about networks, see Chapter 12, "Networks and Windows 3.1."

### Multimedia Driver Files

*W*

The following drivers support the multimedia capabilities of Windows 3.1.

| *Filename* | *Purpose* |
|---|---|
| MCICDA.DRV | MCI CD-audio driver |
| MCISEQ.DRV | MCI driver for MIDI driver |
| MCIWAVE.DRV | MCI driver for waveform audio |
| MIDIMAP.DRV | Driver for MIDI Mapper Control Panel extension |
| MPU401.DRV | MIDI driver for MPU401 compatibles |
| MMSOUND.DRV | Multimedia sound driver |
| MSADLIB.DRV | MIDI driver for Adlib compatibles |
| SNDBLST.DRV | SoundBlaster 1.5 DSP driver |
| SNDBLST2.DRV | SoundBlaster 2.0 DSP driver |
| TIMER.DRV | Multimedia timer driver |

## Font Files

Windows has several fonts for supporting the Windows system and Windows applications, and for non-Windows applications running in Windows and data copied to the Clipboard from those applications. For details about Windows fonts, see Chapter 9, "Fonts."

Font files usually have a .TTF, .FON, or .FOT filename extension.

### System Font Files

Three basic types of fonts are installed to support display and output devices:

- **System** is a proportional font used by default to draw menus, dialog box controls, and other text in Windows 3.x.
- **Fixed** is a fixed-width font used in Windows 2.x and earlier versions as the system font (for menus and dialog boxes).
- **OEM font**, or Terminal, is a fixed-width font used to display the OEM text in the Windows Clipboard Viewer. The OEM font also provides an OEM character set used by some Windows applications.

The system, fixed, and OEM fonts that are shipped with Windows 3.1 are listed in the following tables.

| *System font file* | *Supported display resolution* |
|---|---|
| 8514SYS.FON | 8514/a (1024x768) resolution system font |
| EGASYS.FON | EGA (640x350) resolution system font |
| VGASYS.FON | VGA (640x480) resolution system font |

| *Fixed font file* | *Supported display resolution* |
|---|---|
| 8514FIX.FON | 8514/a (1024x768) resolution fixed system font |
| EGAFIX.FON | EGA (640x350) resolution fixed system font |
| EGAFIX.FON | AT&T (640x400) resolution fixed system font |
| VGAFIX.FON | VGA (640x480) resolution fixed system font |

| *OEM font file* | *Supported display resolution* |
|---|---|
| 8514OEM.FON | 8514/a (1024x768) resolution Terminal font (U.S./Europe) |
| EGAOEM.FON | EGA (640x350) resolution Terminal font (U.S./Europe) |
| EGAOEM.FON | AT&T (640x400) resolution Terminal font (U.S./Europe) |
| VGAOEM.FON | VGA (640x480) resolution Terminal font (U.S./Europe) |

## Raster Font Files

Six resolutions of raster screen fonts are shipped with Windows. If used for printing, raster fonts print text and graphics as bitmaps or raster lines. The resolutions are identified by a letter appended to the filename of the font as described in the following table.

| *Letter* | *Output device* | *Resolution* | *x size** | *y size** |
|---|---|---|---|---|
| A** | CGA display | 2:1 | 96 | 48 |
| B | EGA display | 1.33:1 | 96 | 72 |
| C** | Printer | 1:1.2 | 60 | 72 |
| D** | Printer | 1.66:1 | 120 | 72 |
| E | VGA display | 1:1 | 96 | 96 |
| F | 8514 display | 1:1 | 120 | 120 |

* *x,y* indicates the height/width aspect ratio, in pixels per inch.
** These fonts are not included on the Windows 3.1 installation disks.

By appending the letter that identifies the resolution to the raster font filenames in the following table, you can see the files that Windows installs for a given display or printer. For example, the files for the 8514 raster fonts are COURF.FON, SSERIFF.FON, SERIFF.FON, SMALLF.FON, and SYMBOLF.FON.

| *Font* | *Filename* | *Character set* | *Font description* |
|---|---|---|---|
| Courier | COURx.FON | ANSI | Fixed-width with serifs |
| MS Sans Serif | SSERIFx.FON | ANSI | Sans serif proportional-width |
| MS Serif | SERIFx.FON | ANSI | Serif proportional-width |
| Small | SMALLx.FON | ANSI | Proportional small size |
| Symbol | SYMBOLx.FON | Symbol | Math symbols |

## Vector Font Files

Windows provides these vector font files: ROMAN.FON, SCRIPT.FON, and MODERN.FON. For vector fonts, characters are stored as sets of relative coordinate pair points with connecting lines. Vector fonts are fully scalable fonts, so the font can be created in any size desired, although applications or printing devices might have limits on the font sizes they support.

## TrueType Font Files

W

The TrueType downloadable fonts shipped with Windows 3.1 support the Arial, Courier, Symbol, and Times New Roman font families. Each family requires two files, a .TTF file and an .FOT file.

| *TrueType filenames* | *Font name* |
|---|---|
| ARIAL.FOT, ARIAL.TTF | Arial |
| ARIALBD.FOT, ARIALBD.TTF | Arial Bold |
| ARIALBI.FOT, ARIALBI.TTF | Arial Bold Italic |
| ARIALI.FOT, ARIALI.TTF | Arial Italic |
| COUR.FOT, COUR.TTF | Courier |
| COURBD.FOT, COURBD.TTF | Courier Bold |
| COURBI.FOT, COURBI.TTF | Courier Bold Italic |
| COURI.FOT, COURI.TTF | Courier Italic |
| TIMES.FOT, TIMES.TTF | Times New Roman |
| TIMESBD.FOT, TIMESBD.TTF | Times New Roman Bold |
| TIMESBI.FOT, TIMESBI.TTF | Times New Roman Bold Italic |
| TIMESI.FOT, TIMESI.TTF | Times New Roman Italic |
| SYMBOL.FOT, SYMBOL.TTF | Symbol |
| WINGDING.FOT, WINGDING.TTF | Wingding |

## Font Files for Non-Windows Applications

Some fonts are installed for displaying non-Windows applications in a window when Windows is running in 386 enhanced mode. By default, code page 437 (U.S.) fonts are installed. Other font files are included for international language support. These are identified by the code page number appended to the filename.

The following font files are provided with the associated code page translation table files.

| *Font file* | *Translation table* | *Code page* | *Configuration* |
|---|---|---|---|
| APP850.FON | | 850 | U.S., 386 enhanced mode |
| DOSAPP.FON | | 437 | U.S., 386 enhanced mode |
| CGA40850.FON | XLAT850.BIN | 850 | Multilingual |
| CGA40WOA.FON | - | 437 | U.S. |
| CGA80850.FON | XLAT850.BIN | 850 | Multilingual |
| CGA80WOA.FON | - | 437 | U.S. |
| EGA40850.FON | XLAT850.BIN | 850 | Multilingual |
| EGA40WOA.FON | - | 437 | U.S. |
| EGA80850.FON | XLAT850.BIN | 850 | Multilingual |
| EGA80WOA.FON | - | 437 | U.S. |
| HERC850.FON | XLAT850.BIN | 850 | Multilingual |
| HERCWOA.FON | - | 437 | U.S. |
| VGA850.FON | XLAT850.BIN | 850 | Multilingual |
| VGA860.FON | XLAT860.BIN | 860 | Portuguese |
| VGA861.FON | XLAT861.BIN | 861 | Icelandic |
| VGA863.FON | XLAT863.BIN | 863 | French Canadian |
| VGA865.FON | XLAT865.BIN | 865 | Norwegian/Danish |

## International Support Files

Windows provides language libraries to support a number of languages.

| *Filename* | *Supported languages* |
|---|---|
| LANGDUT.DLL | Dutch language driver |
| LANGENG.DLL | General International language driver |
| LANGFRN.DLL | French language driver |
| LANGGER.DLL | German language driver |
| LANGSCA.DLL | Finnish/Icelandic/Norwegian/Swedish language driver |
| LANGSPA.DLL | Spanish language driver |

## MS-DOS Support Components of Windows

Two kinds of files provide MS-DOS support for Windows: MS-DOS drivers and the grabber files that support data exchange between Windows and non-Windows applications.

### MS-DOS Driver Files

Several MS-DOS driver files are included with Windows. The following drivers are the recommended versions to use with Windows 3.1.

| *Driver* | *Purpose* |
|---|---|
| EGA.SYS | EGA MS-DOS driver |
| EMM386.EXE | Microsoft MS-DOS 386 EMS manager |
| HIMEM.SYS | Microsoft MS-DOS XMS manager |
| RAMDRIVE.SYS | Microsoft MS-DOS RAMDrive utility |
| SMARTDRV.EXE | Microsoft MS-DOS SMARTDrive 4.0 disk caching utility |
| LMOUSE.COM | MS-DOS Level Logitech mouse driver |
| MOUSE.COM | MS-DOS mouse driver |
| MOUSE.SYS | MS-DOS mouse driver (installed at MS-DOS boot time) |
| MOUSEHP.COM | MS-DOS mouse driver for Hewlett-Packard systems |
| MOUSEHP.SYS | MS-DOS mouse driver for Hewlett-Packard systems |

### WinOldAp and the Grabber Files

Two primary parts of Windows support non-Windows applications under standard mode Windows: WinOldAp and the grabber. When Windows runs in 386 enhanced mode, the limited resources on the machine are virtualized to provide virtual memory, virtual displays, and virtual communications along with a number of other services. The related files are discussed in "Files for 386 Enhanced Mode" later in this chapter.

WinOldAp and the grabber files support data exchange between non-Windows applications and Windows. The support for non-Windows applications varies, depending on the capabilities of the system CPU and the mode in which Windows is running.

WinOldAp comes in two versions for the two Windows operating modes:

- WINOLDAP.MOD for standard mode
- WINOA386.MOD for 386 enhanced mode

The grabber for your system is specific to the display driver.

The 286 grabbers used for standard mode only support PrintScreen and copying and pasting text between Windows applications and non-Windows applications. The 386 grabbers that support Windows 386 enhanced mode provide the following capabilities:

- Copying text from non-Windows applications
- Displaying data in a windowed virtual machine
- Selecting data in a windowed virtual machine
- Copying graphics to the Windows Clipboard
- PrintScreen

The files that provide font support for the grabbers are listed below, with descriptions of the kinds of display drivers that the grabbers support.

| ***286 grabber support file*** | ***Display device supported*** |
|---|---|
| CGA.2GR | CGA |
| EGACOLOR.2GR | EGA |
| EGAMONO.2GR | EGA monochrome |
| HERCULES.2GR | Hercules monochrome |
| OLIGRAB.2GR | Olivetti/AT&T PVC |
| VGACOLOR.2GR | VGA |
| VGAMONO.2GR | VGA monochrome |

| ***386 grabber support file*** | ***Display device supported*** |
|---|---|
| EGA.3GR | EGA 386 |
| HERC.3GR | Hercules monochrome |
| PLASMA.3GR | Compaq Portable plasma |
| V7VGA.3GR | Video 7 |
| VGA.3GR | VGA |
| VGA30.3GR | VGA (version 3.0) |
| VGADIB.3GR | DIB (8514/a monochrome) |

## Files for Standard Mode

When Windows is running in standard mode, the processor is switched into 80286 protected mode, allowing access to extended memory through XMS support. The DOSX.EXE file, required for standard mode, is the MS-DOS Extender for Windows. When Windows runs in standard mode, WIN.COM executes DOSX.EXE. Then the Kernel file is loaded (KRNL286.EXE for 80286 machines, or KRNL386.EXE for 80386 machines), which in turn loads the other parts of Windows. Two more files support task swapping for standard mode:

- WSWAP.EXE supports Windows applications in standard mode.
- DSWAP.EXE supports non-Windows applications in standard mode.

## Files for 386 Enhanced Mode

In 386 enhanced mode, Windows can use virtual memory. Much of the virtual support is provided by WIN386.EXE, which is executed by WIN.COM. When WIN386.EXE begins to load, it looks for the files identified in the **[386enh]** section of SYSTEM.INI. Some of the standard files are built into WIN386.EXE (designated with the "*****" symbol in SYSTEM.INI entries). The other files that WIN386.EXE loads to support virtual devices are listed in the following table.

| *Filename* | *Virtual device supported* |
|---|---|
| BANINST.386 | Banyan VINES 4.0 instancing virtual device |
| DECNB.386 | DEC Pathworks |
| DECNET.386 | |
| LANMAN10.386 | LAN Manager version 1.0 support |
| HPEBIOS.386 | EBIOS virtual device for Hewlett-Packard machines |
| LVMD.386 | Logitech virtual mouse device |
| MSCVMD.386 | Mouse Systems virtual mouse device |
| V7VDD.386 | Video Seven virtual display device |
| VADLIBD.386 | Virtual DMA device for Adlib |
| VDD8514.386 | 8514/a virtual display device |
| VDDCGA.386 | CGA virtual display device |
| VDDCT441.386 | 82C441 VGA virtual display device |
| VDDEGA.386 | EGA virtual display device |
| VDDHERC.386 | Hercules monochrome virtual display device |
| VDDTIGA.386 | TIGA virtual display device |
| VDDVGA30.386 | VGA virtual display device (version 3.0) |
| VDDXGA.386 | XGA virtual display device |
| VIPX.386 | Novell NetWare virtual IPX support |

| | |
|---|---|
| VNETWARE.386 | NetWare virtual support |
| VPOWERD.386 | Advanced Power Management virtual device |
| VSBD.386 | SoundBlaster virtual device |
| VTDAPI.386 | MultiMedia virtual timer device |
| WIN386.PS2 | Support for PS/2 architecture |

# Windows Applications, Setup, and Other Files

## Files for Windows Applications

The Windows files also include applications, shells, utilities, accessories, and games. The following table lists the applications and associated files, with a brief description of each application.

| *Filename* | *Associated files* | *Application name and description* |
|---|---|---|
| CALC.EXE | CALC.HLP | Calculator (general/scientific) |
| CALENDAR.EXE | CALENDAR.HLP | Calendar |
| CARDFILE.EXE | CARDFILE.HLP | Cardfile (desktop Rolodex) |
| CHARMAP.EXE | CHARMAP.HLP | Character Map |
| CLIPBRD.EXE | CLIPBRD.HLP | Clipboard Viewer |
| CLOCK.EXE | | Clock (analog/digital) |
| CONTROL.EXE | CONTROL.HLP | Control Panel |
| | CONTROL.INI | Initialization file |
| | CPWIN386.CPL | 386 enhanced mode extension for Control Panel |
| | DRIVERS.CPL | Installable drivers extension for Control Panel |
| | LZEXPAND.DLL | File expansion utility for Control Panel |
| | MAIN.CPL | Main Control Panel extension |
| | MIDIMAP.CFG | MIDI Mapper extension file for Control Panel |
| | SND.CPL | Sound extension for Control Panel |
| DRWATSON.EXE | | Windows fault detection utility |
| MPLAYER.EXE | MPLAYER.HLP | Media Player |
| | MMSYSTEM.DLL | Multimedia system library |
| | MMTASK.TSK | Multimedia background task |
| MSD.EXE | MSD.INI | Microsoft Diagnostics utility and initialization file |
| NOTEPAD.EXE | NOTEPAD.HLP | Notepad (desktop text editor) |
| PACKAGER.EXE | PACKAGER.HLP | Object Packager |
| PBRUSH.EXE | PBRUSH.DLL | Paintbrush |
| | PBRUSH.HLP | |
| PIFEDIT.EXE | PIFEDIT.HLP | PIF Editor |
| POWER.HLP | SL.DLL, SL.HLP | Advanced Power Management supporting files |
| PRINTMAN.EXE | PRINTMAN.HLP | Print Manager (Windows print spooler) |
| PROGMAN.EXE | PROGMAN.INI | Program Manager (Windows 3.1 shell) |
| | PROGMAN.HLP | |
| RECORDER.EXE | RECORDER.HLP | Recorder (desktop macro recorder) |
| | RECORDER.DLL | |

| | | |
|---|---|---|
| REGEDIT.EXE | REGEDIT.HLP<br>REGEDITV.HLP | Registration Editor and supporting files |
| | DDEML.DLL | DDE management library |
| | OLECLI.DLL | Client library and server |
| | OLESVR.DLL | for Object Linking and Embedding |

| ***Filename*** | ***Associated files*** | ***Application name and description*** *(continued)* |
|---|---|---|
| SHELL.DLL | | Shell library |
| SOL.EXE | SOL.HLP | Solitaire (most-tested game) |
| SMARTDRV.EXE | | Disk-caching utility |
| SOUNDREC.EXE | SOUNDREC.HLP | Sound Recorder |
| SYSEDIT.EXE | | Windows System Editor |
| TASKMAN.EXE | | Task Manager (application switcher) |
| TERMINAL.EXE | TERMINAL.HLP | Terminal (desktop communications) |
| TOOLHELP.DLL | | Windows Tool Helper library |
| WINFILE.EXE | WINFILE.HLP | File Manager (Windows 3.1 shell) |
| WINHELP.EXE | WINHELP.HLP<br>GLOSSARY.HLP | Help (Windows help engine)<br>Windows Help glossary |
| WINMINE.EXE | WINMINE.HLP | MineSweeper (game) |
| WINTUTOR.EXE | WINTUTOR.DAT | Windows Tutorial |
| WRITE.EXE | WRITE.HLP | Write (desktop word processor) |

Control Panel uses LZEXPAND.DLL to decompress files from the Windows installation disks. Because most of the files on the Windows installation disks are compressed (except SETUP.INF, SETUP.EXE, and EXPAND.EXE), Control Panel must decompress the files to install a new printer or to add fonts. LZEXPAND is a Windows library counterpart to EXPAND.EXE.

## Setup-Related Files

Setup has a number of files for its exclusive use. For example, the *.LGO files contain the code for displaying the opening screen logo, and the *.RLE files contain the actual logo bitmap (in Run Length Encoded format). Setup combines the .LGO and .RLE files with the WIN.CNF file to create WIN.COM. Setup also uses the files listed in the following table.

| ***Filename*** | ***Purpose*** |
|---|---|
| SETUP.SHH | Automated Setup template |
| SETUP.EXE | Windows Setup application file |
| SETUP.HLP | Setup Help |
| SETUP.INF | Setup information file |
| SETUP.INI | Initialization file for Setup |
| SETUP.REG | Registration Database template |

| | |
|---|---|
| SETUP.TXT | Windows Readme file |
| VER.DLL | Version Resource and File Installation library |
| WINVER | Windows-version utility |
| XMSMMGR.EXE | Setup XMS Manager |
| EXPAND.EXE | MS-DOS-based file expansion utility |

| ***Filename*** | ***Purpose*** *(continued)* |
|---|---|
| **Startup logo files:** | |
| CGALOGO.LGO | CGA startup logo code |
| CGALOGO.RLE | CGA display logo screen |
| EGALOGO.LGO | EGA display logo screen |
| EGALOGO.RLE | EGA display logo screen |
| EGAMONO.LGO | EGA mono startup logo code |
| EGAMONO.RLE | EGA monochrome logo screen |
| HERCLOGO.LGO | Hercules mono startup logo code |
| HERCLOGO.RLE | Hercules display logo screen |
| VGALOGO.LGO | VGA startup logo code |
| VGALOGO.RLE | VGA display logo screen |
| **Initialization and information source files:** | |
| APPS.INF | Information file for non-Windows applications |
| CONTROL.INF | Information file for Control Panel and printer installation |
| CONTROL.SRC | CONTROL.INI template |
| PRTUPD.INF | Information for printer driver updates |
| SYSTEM.SRC | SYSTEM.INI template |
| WIN.CNF | Windows startup code |
| WIN.SRC | WIN.INI template |

## Other Files

These files serve a wide range of functions, including support for PS/2 architectures and README files for general information.

| ***Filename*** | ***Purpose*** |
|---|---|
| MORICONS.DLL | Icons for non-Windows applications |
| **Bitmaps files for wallpaper:** | |
| 256COLOR.BMP | 256-color wallpaper |
| ARCADE.BMP | Arcade wallpaper |
| ARCHES.BMP | Arches wallpaper |
| ARGYLE.BMP | Argyle wallpaper |
| CARS.BMP | Cars wallpaper |
| CASTLE.BMP | Castle wallpaper |
| CHITZ.BMP | Chitz wallpaper |
| EGYPT.BMP | Egypt wallpaper |
| FLOCK.BMP | Flock wallpaper |
| HONEY.BMP | Honey wallpaper |
| LEAVES.BMP | Leaves wallpaper |
| MARBLE.BMP | Marble wallpaper |
| REDBRICK.BMP | Redbrick wallpaper |
| RIVETS.BMP | Rivets wallpaper |
| SQUARES.BMP | Squares wallpaper |

| ***Filename*** | ***Purpose*** *(continued)* |
|---|---|
| TARTAN.BMP | Tartan wallpaper |
| THATCH.BMP | Thatch wallpaper |
| WINLOGO.BMP | Logo wallpaper |
| ZIGZAG.BMP | Zigzag wallpaper |
| **Screensaver files:** | |
| SSSTARS.SCR | Stars screen saver |
| SCRNSAVE.SCR | Generic screen saver |
| SSMYST.SCR | Mystify screen saver |
| SSMARQUE.SCR | Marquee screen saver |
| SSFLYWIN.SCR | Flying Windows |
| **MIDI sound file:** | |
| CANYON.MID | Canyon MIDI sound |
| **Wave-form sound files:** | |
| CHORD.WAV | Question Sound |
| DING.WAV | Default Beep |
| CHIMES.WAV | Exit Sound |
| TADA.WAV | Start Sound |
| **README files:** | |
| NETWORKS.WRI | README file for networks |
| PRINTERS.WRI | README file for printers |
| README.WRI | README file |
| SYSINI.WRI | README file for SYSTEM.INI |
| WININI.WRI | README file for WIN.INI |
| **Miscellaneous hardware support and other supporting files:** | |
| 386MAX.VXD | Qualitas 386MAX virtual device for standard mode |
| BLUEMAX.VXD | Qualitas BlueMAX virtual device |
| COMMDLG.DLL | Windows Common Dialogs library |
| TIGAWIN.RLM | TIGA firmware code |
| WIN87EM.DLL | 80x87 math coprocessor emulation library |
| WINDOWS.LOD | Qualitas 386MAX/BlueMAX loadable module |
| TESTPS.TXT | PostScript test text file |

## Files You Can Delete

Because of the large number of files that come with Windows 3.1, you might want to delete some of the files to free disk space.

***Note*** Do not delete any of these files while Windows is running. Instead, exit Windows, then delete the files from the command prompt.

You can delete these files when Windows is not running without degrading Windows performance:

- EMM386.EXE (expanded memory emulator) if you don't need to provide EMM support for non-Windows applications
- Any files in the TEMP directory
- Any files that start with the characters ~WOA or ~GRB
- Any files named WIN386.SWP (a temporary Windows swap file)

You can choose the Windows Setup icon in Control Panel, then choose Add/Remove Components from the Options menu to remove any of these files from your system:

- Any accessories you do not use (such as Paintbrush, Write, Calendar, Cardfile) with their related .HLP and .DLL files
- Games
- Screen savers
- Wallpapers (.BMP files) and sound files (.WAV files)

For a list of the files for a minimum Windows configuration, see "Minimizing the Windows 'Footprint'" in Appendix C, "Windows 3.1 Disks and Files."